A Pharmacist-Led Program to Taper Opioid Use at Kaiser Permanente Northwest: Rationale, Design, and Evaluation

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Perm J 2020;24:19.216

E-pub: 04/21/2020

https://doi.org/10.7812/TPP/19.216

ABSTRACT

Introduction: Primary care practitioners (PCPs) are concerned about adverse effects and poor outcomes of opioid use but may find opioid tapering difficult because of a lack of pain management training or time constraints limiting patient counseling. In 2010, Kaiser Permanente Northwest implemented a pharmacist-led opioid tapering program—Support Team Onsite Resource for Management of Pain (STORM)—to address high rates of opioid use, alleviate PCPs' workload demands, and improve patient outcomes.

Objective: To describe the rationale, structure, and delivery of this unique pharmacist-led program, which partners with PCPs and provides individualized care to help patients reduce opioid use, and the Facilitating Lower Opioid Amounts through Tapering study, which examines the program's effectiveness, cost-effectiveness, and implementation.

Results: The STORM program includes a pain medicine physician, a social worker or nurse, and pharmacists who have received specialized clinical and communications training. The program has a 2-fold role: 1) to provide PCP education about pain management and opioid use and 2) to offer clinician and patient support with opioid tapering and pain management. After program training, PCPs are equipped to discuss the need for tapering with a patient and to refer to the program. Program pharmacists provide a range of services, including opioid taper plans, nonopioid pain management recommendations, and taper-support outreach to patients.

Discussion: The STORM program provides individualized care to assist patients with opioid tapering while reducing the burden on PCPs.

Conclusion: The STORM program may be a valuable addition to health care systems and settings seeking options to address their patients' opioid tapering needs.

INTRODUCTION

Opioid analgesic prescribing in the US increased consistently from 1999 until reaching a peak in 2012.[1] Despite decreases in prescribing, 17% of Americans still had at least 1 opioid prescription filled in 2017 and prescription opioid amounts were, on average, 3 times higher than in 1999.[2] Although it is more common for patients to use opioids for short periods, a substantial number of patients continue opioid therapy for much longer periods. *Long-term opioid use,* defined by the Centers for Disease Control and Prevention as the use of opioids on most days for more than 3 months, puts patients at increased risk of serious adverse effects that include reduced function and quality of life; increased risk of fractures, motor vehicle accidents, and cardiovascular events; and poor outcomes related to their opioid use, such as central nervous system depression, misuse, opioid use disorder, or opioid-related death.[3-14] These risks appear to be related to both the dose and duration of use.[15,16]

Opioid prescribing guidelines released by the Centers for Disease Control and Prevention in 2016 address the initiation of opioid therapy and the ongoing monitoring of that therapy, including the need to reduce the opioid dose—or taper—when treatment goals are not being met or when the risks of therapy begin to outweigh the benefits.[3] To accomplish this, clinicians are relied on to identify unsafe opioid use, develop tapering goals and plans with patients, monitor the tapering process, identify potential opioid diversion, and coordinate care with mental health and pain specialists when needed.[3] However, primary care clinicians often cite insufficient training in pain management and time constraints as factors that make the substantial effort associated with tapering difficult.[17] Prior research has shown that approaches that off-load work from primary care to other health care practitioners can reduce clinician stress and may lead to better patient outcomes.[18] In particular, pharmacist-led interventions have shown promise in attainment of therapeutic goals and improvement of quality of care, including in the management of opioid use for reduction of chronic pain.[19-27]

The Support Team Onsite Resource for Management of Pain (STORM) program is a novel, pharmacist-led, referral-based, opioid tapering program implemented by Kaiser Permanente (KP) Northwest (KPNW) to address high rates of prescription opioid use and primary care workload demands and to improve patient experience and outcomes related to opioid use and tapering. The objectives of this manuscript are to describe 1) the rationale, structure, and delivery of the pharmacist-led STORM program that partners with primary care practitioners (PCPs) and provides individualized care to help patients reduce their opioid use; and 2) the National Institutes of Health-funded Facilitating Lower Opioid Amounts through Tapering (FLOAT) study, which seeks to examine the effectiveness, cost-effectiveness, and implementation of this novel program.

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iKeywords: opioid tapering, chronic pain, opioids, pharmacy, primary care

METHODS

Our descriptions of the program were primarily gathered through meetings with Health Plan staff integral to the conceptualization, design, and implementation of the STORM program and reviews of historical program documentation. To complement our descriptions, we have included data gathered through qualitative interviews with current and former pharmacy and clinical program staff (15 total interviews with 12 pharmacists, 1 social worker, 1 nurse case manager, and 1 pain management physician). Staff trained in qualitative methods (JS, AF, and DPT) conducted the interviews in-person or over the telephone, which lasted approximately 60 minutes and were audiorecorded for transcription. Interview questions explored topical areas such as the purpose, history, and structure of the program; training of program staff and delivery of the program in the health care system; and descriptions of the referral and taper approach. This study was approved by the KPNW institutional review board.

PROGRAM OVERVIEW

KPNW is an integrated health system that provides care for approximately 600,000 members in northwest Oregon and southwest Washington. Each KPNW patient is managed by a PCP who coordinates care, including the prescribing and use of medications, such as opioids. The Health Plan employs about 500 PCPs—inclusive of physicians, physician assistants, and nurse practitioners—who are supported by an integrated system of medical specialties, including pain management and pharmacy services. Care is delivered in 34 KP medical offices and 2 KP hospitals, as well as virtually through telephone and video appointments. Data for all care delivered are entered into and available to a patient's entire care team via HealthConnect, a fully electronic medical record (EMR).

Rationale

In 2010, KPNW faced a large patient population receiving high-dose opioid prescriptions and PCPs who were overwhelmed with patients who needed to have their opioid doses lowered. (Table 1). At the time, usual care involved chronic pain management and opioid tapering delivered by PCPs, whose schedules often did not allow for the level of frequent follow-up needed to educate patients about chronic pain management and self-management or coping skills, to discuss and plan opioid tapering, or to manage withdrawal during tapering. As a result, opioid tapering would often not occur or would start but cease in the absence of adequate support for patients and PCPs.

In response, KPNW created the STORM program. This pharmacist-led program provides patient education for those taking high-dose opioid therapy and works with patients and their PCP to taper opioid doses to safer levels while also striving to improve patient function and pain control with alternative pharmacologic or nonpharmacologic treatment. This program provides individualized tapering plans that address pain needs while lowering the opioid dosage.

To accomplish its goals, the program serves 2 roles at KPNW: 1) to provide PCP education about chronic pain management and opioid use and 2) to offer direct clinician and patient support with opioid tapering and pain management optimization.

Program Staffing and Training

The STORM program is delivered by a multidisciplinary team comprising pain management pharmacists, a pain medicine physician lead, a clinical social worker, and a registered nurse. All STORM team members possess basic practice credentials: Doctor of pharmacy for pain management pharmacists, licensed clinical social worker and master of social work for social workers, and bachelor of science in nursing for nurses.

All STORM pharmacists undergo clinical training and continuing medical education (CME) directly relevant to the management of chronic pain and opioid tapering. The clinical curriculum accounts for 25 hours of CME training completed over several months and provides intensive education in pain medication pharmacology, pain treatment philosophy, and clinical applications of pain management. The curriculum also provides practical skills related to opioid management, including chronic pain assessment, calculating morphine milligram equivalents, opioid safety monitoring strategies (eg, use of urine drug screens and pill counts), and calculating the average opioid use relative to the prescribed dose to monitor opioid use. The STORM pharmacists also receive education about medical or recreational cannabis use and local regulations related to opioid use.

The STORM team has compiled a compendium of pain management resources that supplement the team's own training of new STORM pharmacists and other clinicians. These resources include practical clinical tools such as opioid equivalency and conversion charts, pain assessment tools and instructions for their use (eg, Brief Pain Inventory), and patient education material. Additional online resources include reference materials related to threat management, unexpected results of pill counts or urine drug screens, cannabis use, and Health Plan guidelines for opioid therapy planning.

All STORM practitioners undergo 8 hours of CME training that focuses on advanced communication, motivational interviewing, and patient engagement skills in the context of opioid use management. Training for STORM pharmacists also includes shadowing pain and addiction medicine physicians and experienced STORM pharmacists. The pharmacists also attend KPNW pain management group classes, which are delivered by multidisciplinary teams and are aimed at educating patients about pain-related self-management skills. By attending these groups, the pharmacists learn more about the self-care strategies that they teach to their patients during the tapering process. This practical training, including shadowing, continues until the STORM Pain Medicine Physician Lead believes the STORM pharmacist is ready to directly interact with and provide care for patients undergoing opioid tapering.

In qualitative interviews, the STORM pharmacists emphasized the importance of this baseline training, because it serves as the foundation for their understanding of the complexity of chronic pain management and the importance of a multifaceted approach to managing pain (Table 1). Pharmacists also

Table 1. Qualitative feedback regarding STORM program and its processes

Program component	Qualitative interview quotes from former and current program staff
Rationale and need for program	It [was] 2009, and for years what we were doing was exactly what everybody in the nation was doing—getting people on opioids for chronic pain … . I specifically noticed with OxyContin [oxycodone] that patients were … craving it, and it was making me nervous. … I said I think the only way for primary care to have a chance of getting patients off of these high doses of OxyContin is if we do education with them [patients], one-on-one, and with the doc[tor]—maybe give them the services of a pharmacist. I said, we need some kind of group that could help the primary care doctor, help the patients get off of [the opioid] with regular contact and phone calls because primary care just did not have those resources.—STORM pain medicine physician
Focus on patient-centered care	I start with where the patient is … and I'll also look and see what [the] clinician's goal is. So, is the clinician's goal to taper off? Is their goal to taper down? Or is it to taper off all the long-acting [opioids] and just go to short-acting? So, I take a look and see what's been discussed and what the clinician wants, and from there it's pretty individual … but again, giving them an option of where they want to start. And then I check in with them at every step of the way. … So, it could be anywhere from if we were tapering 9 tablets of oxycodone and the goal is off, we might be reducing by a tablet a week until they're off. Or it might be if they're really struggling, maybe it's a half a tablet a week. Or maybe it's even faster. Maybe it's a couple of tablets. If they're really tolerating it and the goal is to be off, and the patient is ready, then we can be off in just a couple of weeks. The taper process can range anywhere from a couple of weeks to a couple of months, and even quite longer when we've got a high-dose patient that we're tapering down.—STORM pharmacist
STORM pharmacist training	[O]ur baseline training is really understanding the complexity of chronic pain management neuroplasticity and the importance of a multifaceted approach to managing pain—and that baseline training has been really crucial. As the years have gone by and new information has come out … about other medications, other successes of different pain treatments, then certainly we've added in new things … and then we've had the motivational interviewing training, or the communication intensive. And we all go to different continuing education seminars, and as we learn things that are new being done out there, we report back to the group. But that baseline [training] was very strategic.—STORM pharmacist
Primary care practitioner training	We were creating something fresh, there was not a model out there. … I remember what my thought was at the time: that the only way we were going to get these doctors' attention is if they had time in clinic dedicated to the training, number 1. And number 2, we were talking about their patients, not just a generic patient out there having a problem, so the training was very real.—STORM pain medicine physician
	It's our goal well before that first provider training session to stop by, introduce ourselves—spend time talking to them about who we are, what we can do, how we can support them. … We will show them how to set the stage if they have a new patient coming to them on an opioid regimen that they are not comfortable with, either with basic scripting or a basic approach of what to do at that first visit—so we do that within the first few weeks of when a provider is [new] here. And then … they have their STORM session. We intentionally plan that about 3 months after they've started [with KPNW] because they are more familiar with [the KPNW electronic health record] and they have more patients; they've had some situations come up where they can apply this.—STORM pharmacist
Primary care referral for inclusion in program	The referral process is really driven by the clinician. After the PCP has had the discussion with a patient, hopefully at that point, they've asked if they would like to be helped by STORM. And if so, then they refer to us at that point. … And they'll take a look and make sure that the documentation is in the chart [medical record], that the clinician has actually talked with the patient, that they've discussed the STORM outreach. … We need to have patients onboard. … So, whenever we get a referral into the pool, they'll take a look at it and make sure it's something that is appropriate for STORM and that the documentation is in the chart.—STORM pharmacist
Role of social worker in STORM	People are petrified. They don't want to taper. They're angry about it. They're scared about it. And I'm the first person to reach out. … [W]hat I'm doing for a 60-minute telephone call is I am building trust and confidence and rapport in this buy-in, so that when the pharmacist comes along behind me and calls the patient—there's a second call—then the patient is now, basically, willing to try to taper.—STORM social worker
Initial patient outreach	[I]nitially when I outreach to the patient, I guess the number 1 thing I do before I call, I … look at the chart to get a sense of what's going on and kind of get a sense what the [taper] change is supposed to be—if the change was discussed between the patient and the provider—and also try to get a sense of whether this is the patient's request, or is it the provider's request. [I] just kind of prepare myself for what kind of call it may be.—STORM pharmacist
	I think during the initial conversation, it's really key to establishing that relationship with the patient. I think that's where … motivational interviewing comes in: Opening it to the questions. I find when the patient feels heard, and even though they might not agree with the plan, that we're there to help them and make this successful, I think even those patients who have some resistance initially, [with] that kind of approach … they tend to work with us. [It] opens the door to that relationship.—STORM pharmacist
Role of STORM pharmacist	My daily work mostly is reaching out to patients. … And we're checking in with them routinely, usually monthly, finding out how they did with whatever changes we made the preceding month, particularly withdrawal symptoms. … We do ask about pain levels, but I feel we try to put more of an emphasis on how was your function affected? Assessing and offering help with withdrawal symptoms, if they've had that experience. And making sure that they're staying involved in nondrug modalities that we've recommended to them. Encouraging [participation in] the pain [management] class. You know, primarily just letting them know they've got support through this, and they have someone to call, even when I'm not calling routinely. There're some people I just might give a 1-time follow-up or a 1-time consult and kind of tell them what to expect of the taper. We're still providing them our contact information for them to call us and let us know if they're having difficulties.—STORM pharmacist

KPNW = Kaiser Permanente Northwest; PCP = primary care practitioner; STORM = Support Team Onsite Resource for Management of Pain.

Table 2. Overview of primary care practitioner training sessions

Topic	Concepts
Program overview and introduction of STORM team	STORM *Pain Medicine Physician Lead* sets the stage, describes standards of care and new regulatory issues, helps clinicians become more competent and comfortable, and recognizes challenges to managing pain and opioid tapering in primary care.
	STORM *pharmacist* discusses ongoing progress in the reduction of opioids, reviews how the STORM team can assist in conversions/tapers, and says how to contact the STORM team for help.
Introduction to STORM services	Description of the STORM team
	Services offered: Pharmacist-led opioid tapering, medical record reviews, advice
	STORM referral procedures and setting expectations around time until STORM outreach
	How practitioners can have a conversation with the patient: You could say: We are learning new things about chronic pain management and the effects of long-term opioid use. We are finding that people who have been on these medications for a long time feel better on either less medication or a different kind of medication. *I'd like you to work with a pain pharmacist to make changes to your medication therapy*.
	Description of additional available services
	Early refill/pill count protocols through pharmacy
	Short- and long-acting opioids
	Other medication refill/discontinuation issues
Clinical tools related to opioid use	Opioid therapy plan operational criteria, basic vs complex; use of opioid therapy plan as a tool about agreement and expectations surrounding the use of opioids (early refills, lost/stolen medication, urine drug screen, etc)
	Prescription Drug Monitoring Program and how it can help
Patient reviews	STORM *pharmacist* case review (before training session): Pain-related diagnoses Location and quality of pain Level of function Current and historical opioid use Observed safety concerns that might influence treatment options, adequate therapeutic use of nonopioid medications Follow-through with other recommended health care services: pain management classes, use of supportive devices, care from specialty departments such as the pain clinic Other relevant observations: past adherence to recommended nonopioid treatments, use of medications not recommended when taking opioids such as benzodiazepines, contribution of comorbidities that may make chronic pain management more difficult (eg, anxiety) or that may be contributing to chronic pain (eg, obesity)
	Discussion of the PCP's perspective of this patient
	Discussion of potential barriers to change in this particular patient
	STORM *Pain Medicine Physician Lead* reviews variety of talking points: How to set realistic expectations of opioids (only up to 30% reduction of pain in 50% of patients), benefits of multimodal pain management with nonopioid and nonpharmacologic therapies Use of pain scale Description of tolerance to analgesia vs tolerance to euphoria Success of opioid therapy defined by decreased pain *and* increased function, and when to change course with an opioid trial and taper instead Using the issue of safety to address concerning behaviors
	Examples of how the pharmacists can help with each case (pill count, urinalysis, staging opioid prescriptions, how to send referral, etc)
Information about available pain management resources	Pain management group class information and script for PCP to discuss attendance with patients
	What is covered in the session and the message that we give the patients attending the sessions
	Online resources
	Formulary and nonformulary nonopioid medication options
	Nonpharmacologic strategies and referral options: physical therapy, acupuncture, chiropractic, etc
Clinical resources related to STORM program and opioid management	When to refer to pain clinic, STORM, or Addiction Medicine department
	Script of discussion with patient about referral
	Online resources
	"STORM notebook" with compendium of references provided to each clinician at the meeting
	Electronic medical record charting tools
	Use of urine drug screen and interpretation of results
Review/questions/wrap-up	Review of clinician issues, questions, concerns, what they hope to gain, specific problem areas they encounter

PCP = primary care practitioner; STORM = Support Team Onsite Resource for Management of Pain.

emphasized the importance of communications training and continuing education as new guidelines and approaches to pain management become available (Table 1).

PROGRAM DELIVERY: PRIMARY CARE PRACTITIONER EDUCATION AND TRAINING

The STORM team provides detailed CME sessions on chronic pain management for every clinician who delivers primary care at KPNW (Table 2). The 2-hour training sessions assist PCPs in developing skills that will help them to assess and safely manage chronic pain in their patients while also educating them about STORM services available to them. During these trainings, the STORM pain medicine physician and pharmacist work in tandem to provide PCPs with current evidence and practice recommendations about the role of opioids for chronic pain management, use of short-acting vs long-acting opioids, nonpharmacologic approaches to pain management, opioid therapy plans, and prescription drug monitoring programs. (Training materials are available on request.)

The training session includes a review and discussion of particular patient cases that the PCP has selected before the meeting. According to the STORM Pain Medicine Physician Lead, the review of the PCP's own patients, rather than generic patient cases, is integral to engaging PCPs in the training (Table 1). In preparation for the meeting, the pharmacist reviews the medical history of the PCP's real-world cases and focuses on helping the PCP understand how the patients reached their current level of opioid use and how the PCP can help patients diversify their pain management repertoire to decrease their opioid dose, if appropriate.

The STORM session provides the PCP with a forum for discussing next steps and possible approaches to what could be a challenging conversation about tapering or addressing concerning behaviors. Then the PCPs can practice communication using a script that was developed by STORM to provide examples of difficult patient conversations. The script provides clinicians with examples of dialogue that not only seek to validate the patient's experience with chronic pain but also provide the patient with a clinical rationale and evidence that supports the decision to taper opioids (Table 2). The script provides additional approaches that the PCP can use to introduce the patient to the tapering process and engage the patient in shared decision making related to opioid tapering.

The STORM team also uses the session as an opportunity to express KPNW leadership's encouragement for PCPs to actively discuss opioid changes with their patients; engage in shared decision making around the opioid tapering process; and, if needed, pursue an opioid taper when it is the safest course of action, even if the patient is not in agreement. Clinicians are encouraged to offer patients the STORM multidisciplinary support during the taper and are informed on how to refer patients for STORM intervention.

Although there is no formal evaluation related to the training, it is assumed that, on completion of the training, PCPs are armed with a comprehensive overview about chronic pain management. They are aware of the resources available to diversify a patient's pain management plan. They have learned how to recognize the need for an assisted taper; how to discuss opioid tapering with their patients; and, if agreed on mutually with patients, how to refer their patients to the STORM program. After PCPs meet with their patients and set the stage for tapering, they contact the STORM program for assistance. This step brings us to the second principal role of the STORM program: Team-supported opioid tapering (Figure 1).

Program Delivery: Opioid Tapering Activities Supported Or Led By Storm

Support from the STORM program comes in many forms depending on patient and PCP needs. All STORM program activities are initiated by communication from the PCP. After this contact, the STORM team assesses patient needs and appropriateness of the taper and its timing through review of patient medical history, current opioid dose (morphine milligram equivalents), past taper trials, and active care from other clinical departments or specialties. During the review, it may be determined that tapering should be deferred. Reasons for a deferred taper include, for example, acute illness, unexpected social situations (eg, death in the family), or a patient currently having another medication tapered (eg, benzodiazepine tapering). Patients with acute or postoperative pain, patients who are actively being seen by the pain specialty clinic, patients with cancer-related pain, pregnant women, patients receiving palliative or hospice care, and those with unstable mental illness are typically excluded.

If tapering is determined to be the appropriate course of action on the basis of this review, the STORM team provides either a direct consultation for PCP-led opioid tapering or proceeds to pharmacist-led opioid tapering (Figure 1). The STORM team may also determine that a patient may benefit from health care services in addition to or instead of opioid tapering. At this point, the STORM pharmacist may advise the PCP to refer the patient to additional health care services such as specialty pain management, mental health services, addiction medicine, or surgery.

Pretapering Support for PCPs

At times, PCPs request that the STORM program facilitate collection and interpretation of background information that will support their clinical actions regarding opioid use and potential tapering. Examples include interpretation of urine drug screen results, a review of past medication trials, a summary of observed safety concerns, or comprehensive medical record review in anticipation of an appointment to discuss changes to the pain management plan and opioid tapering. A STORM pharmacist will review the patient's record and communicate with the PCP to address questions or concerns, provide context for the information presented, and recommend next steps. In the event of an unexpected result of a urine drug screen, for example, the pharmacist will highlight if this is a single event vs a pattern of behavior, identify what substances may have yielded the result, outline suggested next steps with safety monitoring or if taper is indicated, and promote further clinician-patient discussion about changes to the treatment plan.

Primary Care Practitioner-Led Tapering

PCPs may elect to use the STORM program to receive opioid tapering advice or assistance for the creation of an opioid tapering plan. As part of this process, the pharmacist performs a medical record review and provides observations and recommendations that may be helpful to the PCP during the tapering process. The pharmacist also develops a plan that provides the PCP with future prescription orders that will taper opioid use at a specific rate (eg 10% decrease in dosage per month) individualized to the patient's opioid regimen, comorbidities, and risk factors. During this process, pharmacists are readily available to consult with PCPs about the tapering plan and process or the potential need for plan modifications. The STORM pharmacists also offer to "stage" opioid prescriptions (ie, preparing future prescriptions in the EMR that will achieve a set taper rate) to match a tapering plan for PCPs to review and approve. This helps the taper proceed in a timely and accurate fashion, with each prescription updated with the change in medication strength, quantity, and directions.

Nonvoluntary Opioid Tapering

At times, an opioid taper must occur because of safety concerns even if the patient is not in agreement. In these cases, the PCP may still offer STORM program support. If the patient agrees to work with the STORM program, ongoing follow-up and withdrawal support will occur until the opioid taper goal is achieved. Although the STORM process is the same as for a voluntary taper, there is less flexibility about if or how the taper will proceed. If the patient declines active participation in the STORM program, STORM pharmacists still support the PCP to keep the taper on track by staging prescriptions in the EMR for clinician review and approval. Before staging the prescription for each step of the taper, the pharmacist reviews the EMR for updated medical information that might influence how the taper should proceed (eg, ED visit for illicit substance toxicity or acute postsurgical pain).

Pharmacist-Led Tapering

When a PCP makes a referral for a STORM-led opioid taper, a STORM team pharmacist performs a critical review of the patient's medical record, including comorbidities, pain source, and other medical needs, in an effort to triage patients on the basis of individual needs (Table 3). Attention is given to safety concerns that may suggest that expedited intervention is needed, such as recent hospitalization for respiratory depression, central nervous system impairment or use of illicit substances. The triaging pharmacist ensures that STORM is the right resource for the patient and the patient's clinical picture and seeks to identify other helpful interventions that can be brought to the PCP's attention for implementation before or in tandem with opioid tapering through STORM. If the patient

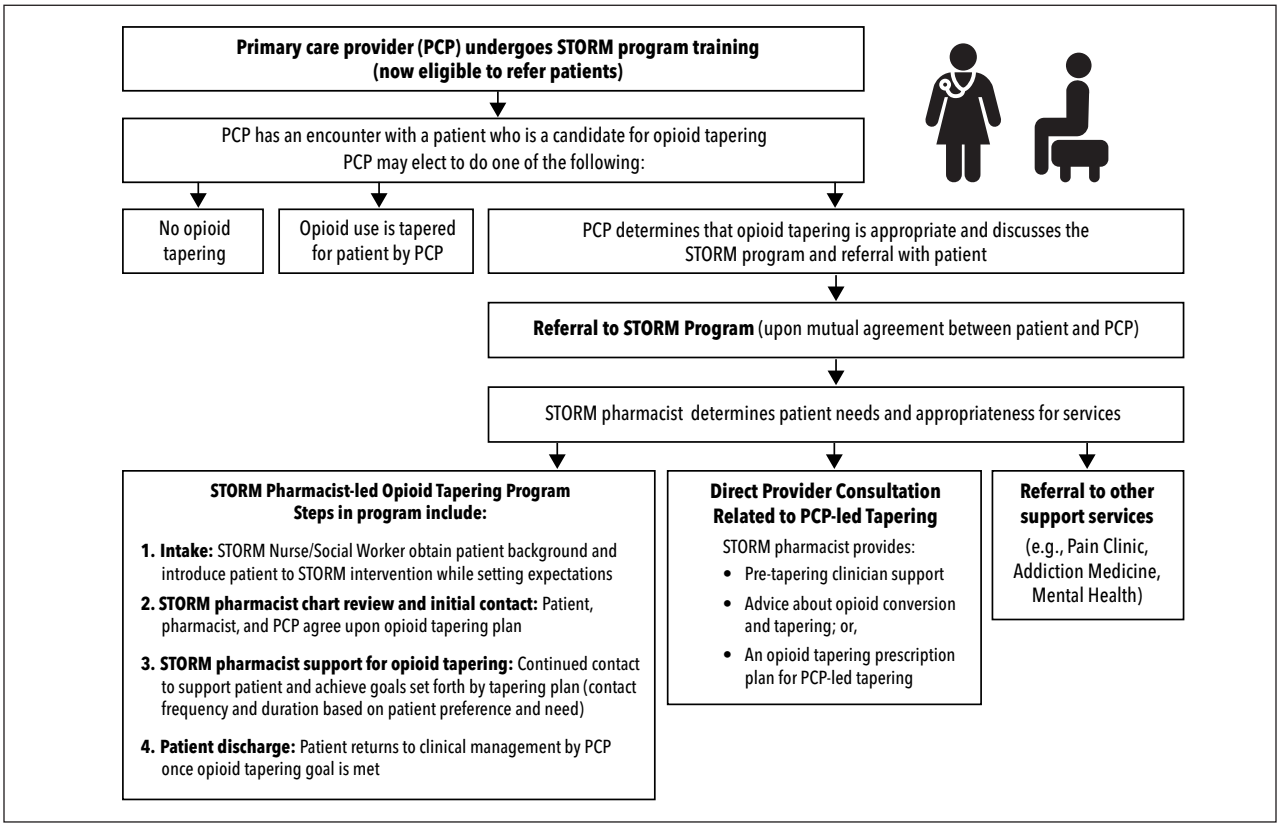

Figure 1. Overview of Support Team Onsite Resource for Management of Pain (STORM) program.

Table 3. Overview of STORM pharmacist-led tapering process

Tapering process step	Description of step and information exchanged
Review of clinical picture to determine appropriateness of STORM tapering (pharmacist)	Review patient history to ascertain: Physical and emotional health comorbidities Acute vs chronic vs malignant sources of pain Need to address mental health or other aspects of their medical care before tapering Safety concerns: recent hospitalization for respiratory depression, central nervous system impairment, use of illicit substances
Initial intake telephone call (social worker or nurse)	Introduce STORM program
	Prepare patient and set expectations
	Review background related to pain: pain location, Brief Pain Inventory (BPI), perception of what makes the pain better or worse
	Review history of patient use of nonpharmacologic strategies for pain control: using heat and/or ice, use of breathing and/or relaxation techniques
	Conduct depression screening: administer PHQ-9
Preoutreach medical record review (pharmacist)	Review: Patient's clinical history History of pain History of opioid use Potential related safety concerns: unexpected results of urine drug screening, history of early refills, respiratory compromise Use of nonopioid prescription medications History of referral and adherence to/follow-through with pain-related health care services
Initial call (pharmacist and patient)	Introduce self and program
	Outline the tapering process
	Obtain patient input that informs development of opioid tapering plan: Pain diagnoses and patient descriptions of their pain, administration of the BPI Current use of opioids, including details about how many pills they are taking and when they take them Use of other medications and how they use them (eg, over-the-counter pain medications, antidepressants, benzodiazepines, herbal supplements) Potential side effects of pain or opioid use, including impact on function or sleep, current or historical substance use disorder, and nonmedication and self-care strategies used by the patient for pain management
	Opioid safety concerns including results of recent urine drug screening and Prescription Drug Monitoring Program (PDMP) data for the patient
	Discuss patient's pain management goals
	Ask if patient has concerns or questions
	Engage in shared decision making to develop opioid tapering plan, including planned reductions and frequency of reductions
	Reach agreement about plan among patient, pharmacist, and PCP
	Discuss what to expect during taper: potential withdrawal symptoms, including withdrawal hyperalgesia, and tips for self-care
	Schedule ongoing communication
Documentation of plan (pharmacist)	Document the call in the EHR, with summary of encounter
	Update patient's opioid prescriptions in EHR to reflect the tapering plan
	Send plan to the PCP for review and approval
Pharmacist-patient contact (ongoing, frequency agreed on with patient)	Review and update information provided by the patient in the initial call with focus on changes in opioid use, other medication use, pain, and function
	Assess for and address withdrawal symptoms: self-care; withdrawal medications; or nonopioid, adjuvant pain medications
	Screen for and ensure that safety monitoring continues (as appropriate): urine drug screens and pill counts, check PDMP
	Allow patients to express any concerns or ask questions
	Adjust opioid tapering plan and contact frequency, as need arises
	Provide recommendations for coordination of care as needed with complementary medicine (eg, acupuncture, chiropractic), sleep medicine, mental health, and addiction medicine specialists and/or pain management group classes
Discharge from STORM program	Return management of patient's pain care to PCP.

EHR = electronic health record; PCP = primary care practitioner; PHQ-9 = Patient Health Questionnaire-9; STORM = Support Team Onsite Resource for Management of Pain.

is an appropriate candidate for tapering, the triaging pharmacist confirms receipt of the PCP referral, provides a timeline for initial STORM outreach, communicates the pharmacist's recommendations for pretapering intervention, and adds the patient to an electronic queue in the EMR that indicates the need for team outreach.

Pharmacist-led opioid tapering begins with a patient intake process delivered via a telephone call (Table 3). All patients are contacted within 2 weeks of referral. During this initial call, the STORM social worker or nurse introduces the patient to the tapering program and provides counseling to prepare the patient and set expectations for opioid medication changes. The social worker or nurse obtains the patient's clinical data such as pain location, level of pain, and perceptions of what makes the pain better or worse. The nurse or social worker also discusses nonpharmacologic strategies for pain and screens patients for depression by administering the Patient Health Questionnaire-9.[28] Results of the Patient Health Questionnaire-9 are entered into the EMR and are also used to prompt additional follow-up with the PCP, mental or behavioral health services, or the STORM program social worker before initiation of the taper. Although the intake call serves as an introduction to the program and as an opportunity to gather additional clinical information, STORM social workers emphasize that the call also provides a valuable opportunity to build patient trust and confidence in the program and its process (Table 1). In addition to the introductory contact, the STORM social worker or nurse may continue to have regular telephone follow-up with patients throughout the tapering process. Continued contact most often occurs for complex patients who may have substantial anxiety or depression, other comorbid health conditions, or a need for additional support. Pharmacists may also request that the social worker or nurse resume active follow-up if a patient begins to experience difficulties with anxiety or depression as the taper progresses.

After the intake call, a patient is paired with a STORM pharmacist who will guide the patient through the opioid tapering process (Table 3). Before direct outreach to the patient, the pharmacist performs a comprehensive medical record review to ascertain an initial understanding of the patient's clinical history and experiences with pain management strategies and opioid use. This review also allows the pharmacist to understand the basis for the referral, including whether the tapering process was initiated by the PCP or by the patient (Table 1). After this review, the pharmacist calls the patient to introduce himself/herself, outline the tapering process, and engage the patient in initial shared decision making around an opioid tapering plan. According to STORM pharmacists, their initial outreach serves as the basis for their ongoing relationship with the patient (Table 1). During this call, the pharmacist seeks the patient's input about information that factors into the development of the tapering plan: pain diagnoses and descriptions of his/her pain, details about current opioid use, the use of other medications and how s/he uses them, potential side effects of pain or opioid use, current or historical substance use disorder, and nonmedication and self-care strategies for pain management. The call also includes a review of any opioid safety concerns, including results of recent urine drug screening and Prescription Drug Monitoring Program data for the patient. Finally, the pharmacist ascertains the patient's pain management goals and addresses concerns or questions.

Using shared decision making, the patient and pharmacist develop an opioid tapering plan. The opioid tapering plan itself outlines the patient's overall goal (eg, complete cessation, tapering to an agreed-on dosage) and provides a framework for how that goal will be attained, including planned reductions in

Table 4. Sample script for opioid tapering scenarios

Example of patient statement	Potential pharmacist response
My pain is so bad, it makes no sense for me to take less. I won't be able to work or take care of my family without my pain medications.	You're scared making these changes will leave you unable to care for your family.
	Would it be OK to share some of the concerns I have about your current pain regimen, and what options I think will be more helpful for you?
	In my experience, we have overestimated how helpful opioids are and underestimated how sometimes they make people feel worse. People frequently are able to lower their dose and end up having their pain improve, and they tell me they feel a lot better.
I have always used my medications safely with no problems. I just want to keep taking what I know works.	You have been doing this for a long time. You feel your current regimen is working for you and are really worried what will happen if we make any changes.
	We now have a better understanding of how opioids work and how they change your body's response to pain. I am worried that the medication may be doing you more harm than good. May I share some information about these risks? Would you be open to discussing some of the other options we have now to manage your pain more safely?
I ran out of my medication early, but with this taper, my pain has increased, and what was I supposed to do?	You feel that increasing your opioid medication was your only option.
	Opioids can be a helpful tool to manage pain, but people who have chronic pain have better results when they also use a combination of nonmedication strategies. Opioids are one angle of many and have some of the biggest risks and setbacks. My hope for you is to improve your pain control by expanding your horizons with other treatment options. I like to think of it as coming at the problem of pain from as many angles as possible
	While we are making changes, it is important that we stay on track with the plan. It is normal for your pain to worsen temporarily when we decrease the dose. You already know a lot of ways to manage your pain. You are resourceful. I also hear you when you say you are not satisfied with your current pain management. May we take some time today to discuss other ways to manage your pain during the taper?

dosage and the frequency of dosage reductions. Ultimately, this tapering plan will be pursued only on agreement by the patient, the STORM pharmacist, and the patient's PCP. On reaching this agreement, the pharmacist communicates with the patient what to expect during his/her opioid taper, including potential withdrawal symptoms, and tips for self-care should symptoms, including withdrawal hyperalgesia, occur.

A follow-up pharmacist outreach is proactively scheduled before conclusion of this initial assessment call, so the patient always knows what to expect regarding the next steps. It is made clear to the patient from the outset that the whole care team is communicating and working together to provide support and meet the patient's health needs throughout the taper. The pharmacist completes a note in the EMR that summarizes the encounter, updates the patient's opioid prescriptions to reflect the tapering plan, and routes the plan to the PCP for review and approval.

The patient and STORM pharmacist continue their telephone contact at the agreed-on frequency, which varies among patients and depends on patient preferences and need. For example, the frequency of contact can vary from 2 telephone visits to more than 20 per year. The ongoing nature of these communications is reflective of the STORM pharmacist guiding and supporting the patient during the opioid tapering process. According to STORM pharmacists, ongoing communications allow the pharmacist to talk with the patient about changes since their last conversation, with an emphasis placed on function as well as withdrawal symptoms, pain levels, and the use of nondrug therapies (Table 1). The pharmacist will also review changes in the use of opioids and other medications as well as assess for and address withdrawal symptoms and their management. Finally, during follow-up calls, the pharmacist will screen for and ensure that safety monitoring continues as appropriate. Follow-up calls also provide time for patients to express any concerns or to ask questions that have come up since the start of the taper. Depending on information shared during these calls, the opioid tapering plan and contact frequency may change, and as the need arises, the STORM pharmacist may recommend coordination of care with other clinical departments, complementary medicine specialists (eg, acupuncture, chiropractic), or pain management group classes. These communications also allow the pharmacists to emphasize the availability and diversity of support throughout the tapering process (Table 1). As such, patients are given the direct telephone numbers for the STORM pharmacist in case sudden needs should arise, even if that need occurs outside normal business hours or on weekends. This direct contact option is perceived to be a critical aspect of the program because it fosters trust and assures the patients that they have ready access to support during their tapering process.

During all contacts with patients, STORM pharmacists engage in active listening and apply motivational interviewing techniques to support the patient during the opioid taper, and they encourage the use of self-care strategies to manage pain. The communication approach used during the telephone interactions emphasizes that the pharmacist listens and reflects patient concerns in a nonjudgmental way and asks questions

Presentation, intervention, and outcome for a patient who underwent STORM pharmacist-led opioid tapering

Patient presentation at start of opioid tapering

- A 62-year-old woman was treated for complex regional pain syndrome, low back pain, right foot pain, and osteoarthritis of both hands and left knee. Her clinical presentation was complicated by concurrent PTSD, generalized anxiety disorder, panic disorder, major recurrent depressive disorder, a body mass index (BMI) of 37 kg/m^2, type 2 diabetes mellitus, and hypertension.
- Her starting medication regimen included methadone at a dosage of 50 mg every 8 hours, oxycodone at 30 mg every 6 hours, lorazepam at 1 mg 3 times daily, and doxepin, 250 mg at bedtime. Her starting daily opioid dose was approximately 2000 morphine milligram equivalents (MME).

STORM opioid-tapering intervention

- Starting in January 2014, the patient worked with the STORM pharmacist to taper to a lower daily opioid dose and facilitate finding other ways to help manage her pain. She resumed aquatic physical therapy and her home exercise program and worked on stress management.
- One year later, she was discharged from STORM after achieving the initial tapering goal dosage of methadone, 10 mg every 8 hours, and discontinuing her use of oxycodone.
- Later that year, she was referred to the STORM program again because of concurrent opioid and benzodiazepine use, and she decided to try tapering her lorazepam first. She nearly tapered off lorazepam but struggled with worsening PTSD symptoms and, in 2016, decided that she preferred to stay at the lower benzodiazepine dose and instead try tapering methadone further with STORM support.
- Because of her struggles with depression and PTSD symptoms, the methadone taper proceeded more slowly than the first phase of her taper. In so doing, she was able to improve self-care, lose weight, and follow through with various specialty referrals to further optimize her health.

Follow-up and outcomes

- As of the beginning of 2019, she was completely opioid-free. Her lorazepam dose has been reduced to 0.5 mg twice daily. Her mood has stabilized, and she is feeling empowered. She has discontinued doxepin use. She started exercising more and eating healthfully and was able to reduce her BMI to 25 kg/m^2. She improved her back pain by participating in physical therapy. She pursued an integrative medicine referral and has further reduced her hemoglobin A_{1C} to 5.7%, which allowed her to discontinue metformin use.

Patient perspective

- In her final phone call with a STORM pharmacist in January 2019, the patient reflected on the 5 years since her original referral to the STORM program. She said, "At first I wondered, 'Why me? What did I do to deserve this punishment [of tapering]?' But you know, I'm so grateful. I was in such a fog and so numb, but I didn't realize it until my dose lowered. I still have pain—this is a fact of my life—but this process made me realize that I have control over my pain. It doesn't have to define me. I don't need to be the victim anymore—about pain or other facets of my life. Tapering forced me to find other ways to manage my pain, and I am ultimately so much healthier than I would have been otherwise." She expressed gratitude for the support with this change in her life. She graciously offered, should the opportunity ever arise, to share her story. "People can learn from my experiences, that you can rise above, come out on top, and be joyful, in a good place."

PTSD = posttraumatic stress disorder; STORM = Support Team Onsite Resource for Management of Pain.

Table 5. Research questions and measurement of RE-AIM implementation evaluation framework dimensions

RE-AIM framework dimension	Research question(s)	Study measures	Data collection and analytic approach
Reach	To what extent did STORM reach the target population and what was the representativeness of participants?	Characterization of PCP training over time, including percentage of eligible PCPs who were trained	Quantitative
Effectiveness	What is the success of the intervention? What is the impact of the STORM program on primary and broader outcomes, overall and by subgroups?	Changes in opioid prescribing patterns, use of nonopioid medications, and patient outcomes related to STORM program implementation	Quantitative
Adoption	What was extent of STORM program uptake by PCPs?	Description of aspects of implementing the program into usual care	Qualitative
Implementation	What were the barriers and facilitators to implementation?	System-, provider-, and patient-level barriers and facilitators to implementation of the program	Qualitative
	What was the consistency of the implementation of the STORM program?	Patient-level predictors of the rate of opioid tapering	Quantitative and qualitative
	What was the cost and budget impact of delivering the intervention?	Cost and cost-effectiveness	Quantitative and qualitative
Maintenance	What were the long-term effects of the STORM program at the patient and provider levels?	Patient-, PCP-, and system-level outcomes (eg, opioid use, health care utilization, health outcomes) over time	Quantitative and qualitative
	Was the intervention maintained over time?		

PCP = primary care practitioner; STORM = Support Team Onsite Resource for Management of Pain.

that encourage patients to be active in their own care, encourage freedom of choice, and emphasize the positive in what the patient brings to the conversation. As an example, a prompt for a patient who is reticent about continued opioid tapering may be: *"It sounds like you're really sitting on the fence as to whether or not you can decrease. What challenges do you feel keep you from decreasing? What would be the benefits to tapering?"* An example of a prompt to encourage continued progress in tapering may be: *"Decreasing your opioid dose can be concerning and difficult. It sounds like you're not quite ready to take the next step at this point. What would need to change in order for you to consider further decreasing your opioid?"* Table 4 provides examples of several scenarios and the use of a script and motivational interviewing during an interaction between a STORM pharmacist and a patient.

The patient is discharged from the STORM program to be clinically managed by his/her PCP, either when the mutually agreed-on tapering goal is met or if, at any point, the patient chooses to end involvement with STORM. A patient's opioid tapering process may be discontinued or suspended because of new developments such as impending surgery or other clinical issues that require prioritization. Patients are eligible for additional STORM services if the need should arise in the future.

The clinical presentation, tapering process, outcome, and perspective of a patient who underwent STORM pharmacist-led opioid tapering is provided in Sidebar: Presentation, Intervention, and Outcome for a Patient Who Underwent STORM Pharmacist-led Opioid Tapering. Additional STORM staff perspectives on the impetus for STORM and reflections on the various components of the program are included in Table 1.

EVALUATION OF STORM PROGRAM

The KPNW Center for Health Research is undertaking the National Institute on Drug Abuse-funded FLOAT study to examine the impact, effectiveness, cost-effectiveness, and implementation of the STORM program. The study, which will be completed in 2020, employs quantitative and qualitative research methods to address dimensions of the RE-AIM framework (reach, efficacy, adoption, implementation, and maintenance).[29,30] Specifically, the RE-AIM implementation science framework evaluates the reach of an intervention to its target population; effectiveness of the intervention on specific outcomes; intervention adoption in a specified setting; and the implementation of the intervention and its maintenance over time (Table 5).[29,30] The study will examine the effectiveness of the STORM program through time-series analyses that compare dispensing patterns of opioid medications in periods before and after STORM training of PCPs. Additionally, the study controls for practitioner and patient characteristics in the context of local and national trends in opioid use and interventions concurrently taking place in the KPNW Health Plan.

Examples of co-interventions include the development of state prescription drug monitoring programs, clinical guidelines around the prescribing of opioids and opioid dosing thresholds (eg, Centers for Disease Control and Prevention prescribing guidelines), and changes in KPNW EMR-based alerts tied to opioid prescribing. Given the positive impacts of the program, our research will also provide additional guidance regarding the dissemination and implementation of similar opioid tapering programs in different health care settings.

CONCLUSION

The risks of chronic opioid use for the management of chronic noncancer pain, especially when taken at high daily doses, are well established. The STORM program is a unique, pharmacy-led resource that seeks to support patients in safely tapering their opioid use. The STORM program provides individualized patient care while reducing the burden on PCPs. Thus, the program may be a valuable addition to health care systems and settings seeking options to address their patients' opioid tapering needs. ❖

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

Acknowledgments

This work was supported by the National Institute on Drug Abuse of the National Institutes of Health (Award Number R01DA042124), Bethesda, MD. The study sponsor had no role in the data collection, preparation of this manuscript, or the decision to submit for publication.

Kathleen Louden, ELS, of Louden Health Communications performed a primary copy edit.

Authors' Contributions

All authors participated in critical review, drafting, and submission of the manuscript and have given final approval to the manuscript.

How to Cite this Article

Kuntz JL, Schneider JL, Firemark AJ, et al. A pharmacist-led program to taper opioid use at Kaiser Permanente Northwest: Rationale, design, and evaluation. Perm J 2020;24:19.216. DOI: https;//doi.org/10.7812/TPP/19.216

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